



FAA In-flight Aircraft Icing Plan

FAA In-flight Icing / Ground Deicing
International Conference

Eugene G. Hill



FAA Post-Roselawn In-flight Icing Actions

- Phase I: Focused on the ART-42/72
- Phase II: Roll upset screening of other similar airplanes
- Phase III: Long-term icing safety improvements



Phase III - Long-term In-flight Icing Safety Improvements

- May 1996 In-flight Icing Conference:
 - » Attended by more than 400 scientists, engineers, and pilots from 19 countries
 - » More than 200 recommendations received for changes to increase the level of inflight icing safety.
- Emphasis placed on SLD and other icing conditions outside of 14 CFR part 25 Appendix C icing conditions.



FAA In-flight Aircraft Icing Plan Development

- The FAA Icing Steering Committee, with advisors from NASA, NCAR, the French DGAC, and MSC, was chartered to consider each conference recommendation and consensus item in the development of a consolidated plan that identified responsible organizations, resources, and task schedules:
- The FAA Icing Plan was published April 1997.



FAA Icing Plan Focus Areas

- **Operations.**
- **In-flight icing meteorology and remote ice conditions detection.**
- **Certification and guidance material.**
- **Icing simulation methods.**
- **Ice accretion aerodynamic effects.**
- **SLD characterization and assessment of mixed-phase icing conditions.**
- **Icing plan administration.**



Operations - Improve Training and Operational Icing Regulations and Guidance Material

- **Issue policy that flightcrew training programs address operations in freezing rain, freezing drizzle, and other icing conditions. Ensure that dispatchers provide pertinent weather information to flight crews.**
- **Standardize icing terminology used in communications, regulations, handbooks, the Aeronautical Information Manual, etc.**
- **Encourage development of better inflight icing training aids by manufacturers, operators, and other aviation groups.**



In-Flight Icing Meteorology and Remote Icing Conditions Detection

- Improve the quality and dissemination of in-flight icing conditions
 - » Continued support of improved diagnosis and forecast of icing conditions using multi-sensors.
 - » Improved graphic displays of icing information.
- Accelerate development of ground based and airborne technologies for remotely assessing icing conditions



Certification and Guidance Material 1/3

- Ensure that future certifications include assessments of roll control force anomalies in SLD icing conditions.
- Issue interim procedures and NPRMs for airplanes receiving new, amended, or supplemental type certificates with unpowered ailerons and pneumatic deicing boots.



Certification and Guidance Material 2/3

- Request the Aviation Rulemaking Advisory Committee (ARAC) to develop certification criteria for safe operations in SLD and mixed-phase icing conditions.
- Supplement the current Appendix C icing conditions for safe SLD operation (aloft and near the ground) and in mixed-phase icing conditions.
- Consider mandatory installation of equipment to alert flightcrews of ice accumulation on critical surfaces.



Certification and Guidance Material 3/3

- Harmonize JAR/14 CFR §§ 23.1419, 25.1419, 25.929, and 25.1093.
- Complete the ARAC Flight Test Harmonization Working Group proposed rulemaking concerning safe flight in Appendix C icing conditions.
- Review, revise, and develop, as necessary, guidance information compliance with inflight icing airworthiness requirements.



Icing Simulation Methods

- Develop validation criteria for simulation methods used to determine ice shapes, including icing tunnels, ice accretion computer codes, and icing tankers.
- Research organizations, industry, and regulatory authorities will cooperate to develop acceptable instrumentation and data processing methods, aerodynamic data, appropriate procedures and limitations for icing simulation methods.



Ice Accretion Aerodynamic Effects

- Support the development of guidance material on ice accretion shapes and roughness, and their effects on airplane handling qualities and performance.



SLD Characterization and assessment of Mixed-phase Icing Conditions

- Support characterization of freezing drizzle, freezing rain, and the safety assessment of mixed-phase icing conditions.
- Support research relative to the physics of freezing drizzle aloft and at ground level.
- Support characterization of SLD icing conditions for operations, simulation, and certification purposes.



Icing Plan Administration

- The FAA Icing Steering Committee is responsible for monitoring the implementation of the Icing Plan. The Steering Committee consists of representatives from:
 - » **Flight Standards Services**
 - » **Aircraft Certification Services**
 - » **FAA Technical Center**
 - » **Air Traffic Control**
- Provisions were made for biannual review and Plan revisions.



FAA Icing Plan Results and Status

- Most of the FAA Icing Plan has been accomplished or is “in-work.”
- Presenting the results and status of the Icing Plan to the public is an objective of this Conference.
- These results and status are integrated into many of the technical sessions presentations. An one hour review of the Icing Plan results and status will be presented in Parlor F at 10:30 on Thursday, 19 June.
- Questions may be presented during the technical sessions panel discussions or during the Friday closing plenary session.